

East meets west at international toxicology congress in Seoul

By Eddy Ball

As one of global toxicology's leading figures, NIEHS and NTP Director Linda Birnbaum, Ph.D., presented a keynote lecture July 2, and chaired sessions, at an international meeting devoted to translational toxicology.

Birnbaum led the six-member U.S. National Toxicology Program (NTP) delegation to the [XIII International Congress of Toxicology 2013 \(ICT2013\)](http://www.ict2013seoul.org/)

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June 30-July 4 in Seoul, South Korea, where they joined a number of NIEHS grantees who also made presentations. The U.S. NTP delegation participated in sessions on the development of high throughput screening-based predictive toxicology, by sharing advances in the U.S. interagency Toxicology in the 21st Century (Tox21) program.

During the meeting, representatives of the U.S. NTP and Korean NTP also discussed international partnerships and participated in a meeting of the International Cooperation on Alternative Test Methods (ICATM). NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) Acting Director Warren Casey, Ph.D., represented the U.S. in discussions with colleagues from around the world (see [text box](#)).

Following their formal meeting in Seoul, Birnbaum and the USNTP delegation joined representatives of the Korean NTP July 5 for a one-day post-congress retreat to continue their discussions.

In a pre-congress meeting June 30, Birnbaum took advantage of an opportunity to meet individually with Her Royal Highness Princess Chulabhorn Mahidol of Thailand, a leading figure in promoting global public health research in Southeast Asia. NIEHS has a long history of partnerships and collaborations in the region, through its Superfund Research Program, and supports research projects there, including ones on e-waste recycling in China and Vietnam.

Delivering a strong environmental public health message

Addressing an audience of toxicologists and health scientists from around the world, Birnbaum reminded her listeners of the important role environment plays in human health.

"Global environmental health matters, because noncommunicable diseases are major causes of death worldwide and underlie almost two-thirds of all global deaths," she said. "Although all countries face epidemics of these diseases, low-income and middle-income countries, and the poorest and most vulnerable populations within them, are affected the most."



Following a full day of pre-congress courses and presentations, ICT2013 President Byung-Mu Lee, Dr.P.H., formally opened the congress by welcoming participants to ICT2013. (Photo courtesy of ICT2013)



Birnbaum developed a simple theme in her talk, but one whose implications challenge the foundations of contemporary biomedical research - "You Can't Change Your Genes, but You Can Change Your Environment." (Photo courtesy of ICT2013)

Referring to the Global Burden of Disease Study 2010 published in [The Lancet](http://www.thelancet.com/themed/global-burden-of-disease) (<http://www.thelancet.com/themed/global-burden-of-disease>) in 2012, Birnbaum delivered a litany of figures on global public health that underscored what she called a global imperative to create and implement effective prevention strategies. "At least

13 million deaths could be prevented, per year, by improving our environment," she said.

In her review of environmental health research by NIEHS and NTP, Birnbaum discussed several emerging concepts. Among them were the developmental origins of adult disease, endocrine disruption, epigenetic modification of gene expression, mixtures, and nonmonotonic dose response to hormones and hormone-like chemicals.

The final part of Birnbaum's presentation moved into a discussion of Tox21 and NIEHS initiatives in the area of global health. Listing the accomplishments of Tox21 during its first four years, she described the 1000 Genomes Project, a genetically diverse platform for high-throughput screening, for prioritizing suspect chemicals for advanced evaluation, and the Diversity Outbred (DO) mouse, a new population-based mouse model for identifying, characterizing, and quantifying hazard, by final-stage *in vivo* assessments of high-priority chemicals selected through high-throughput *in vitro* screening.

Birnbaum concluded with examples of the role of NIEHS as a citizen of the world, by pointing to the new strategic plan and ongoing global health initiatives. These included the Institute's leadership in the Global Alliance for Clean Cookstoves initiative; collaborations in research on arsenic in drinking water, such as ongoing work in Asia and the Americas; impacts of electronic waste exposure in China, Vietnam, and other developing countries; and the health impact of climate change.

Over the following three days, Birnbaum and the NTP delegation joined experts from the U.S., Asia, and Europe in the exploration of the most effective ways to achieve the congress mission of building a translational toxicology program that progresses from basic science, to clinical and environmental outcomes, to enhance global public health.



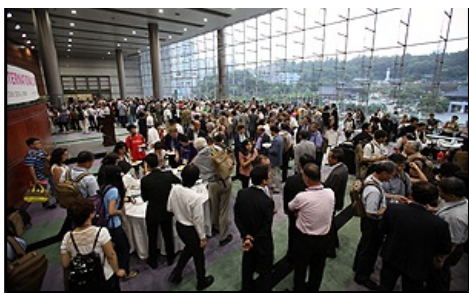
NTP Associate Director John Bucher, Ph.D., second from left, and Birnbaum, to his right, co-chaired the session on "National Coordination of Toxicology Research and Testing" July 2. Lead NTP scientists Mary Wolfe, Ph.D., left, and Nigel Walker, Ph.D., right, also presented the U.S. perspective, while their Korean colleagues discussed their own initiatives in toxicology. (Photo courtesy of Nigel Walker)



Birnbaum, right, took the opportunity to meet with Princess Chulabhorn and discuss opportunities for further collaboration in Southeast Asia. (Photo courtesy of Jutamaad Satayavivad)



One of the largest facilities of its kind in South Korea, the four-story COEX Convention and Exhibition Center in Seoul has four exhibition halls and 48 meeting rooms, with ample space for the ICT2013 poster sessions. (Photo courtesy of ICT2013)



During breaks, attendees could enjoy the mix of old and new Korea outside, as they discussed the presentations and continuing education courses offered at the meeting. (Photo courtesy of ICT2013)



In between sessions or after hours, attendees could experience a bit of Korean cultural history near the convention center, against a backdrop of the skyscrapers of modern Seoul. (Photo courtesy of ICT2013)



The U.S. NTP delegation joined their Korean counterparts, during the historic meeting. Shown, center to right, are Birnbaum, in beige, Wolfe, Walker, and Bucher. Not shown: Casey and NTP scientist Jef French, Ph.D., who spoke about development and applications of the DOmouse model. (Photo courtesy of ICT2013)

Promoting alternative testing on an international level

By Cathy Sprankle

Casey presented an update on NICEATM activities July 3 at a coordination meeting of ICATM, an international partnership that promotes the advancement of replacement, reduction, and refinement alternatives for animal testing. Casey co-chaired the session with Soon Young Han, Ph.D., director of the Toxicological Evaluation and Research Department at the National Institute of Food and Drug Safety Evaluation, part of the Korea Food and Drug Administration, who represented the Korean Centre for the Validation of Alternative Methods.

The ICATM coordination meeting in Seoul included updates from Europe, Japan, Korea, and the U.S. on their current test method evaluation and validation activities. Casey's update was titled "A New Strategic Direction for ICCVAM and NICEATM: Future Plans for the Validation and Acceptance of Alternative Test Methods in the United States." He discussed NICEATM activities supporting Tox21 and NICEATM collaborations to develop new models to identify skin sensitizers, substances with the potential to cause allergic contact dermatitis.

Finding replacements for animal testing, to identify potential skin sensitizers, was the major focus at the July ICATM meeting. However, member organization representatives also provided updates on studies of alternative test methods to identify potential eye irritants, carcinogens, and endocrine-active substances.

ICATM currently includes organizations from the European Union, U.S., Japan, Canada, and South Korea. The government of Brazil recently established the Brazilian Centre for the Validation of Alternative Methods (BraCVAM). The new center will begin participating in ICATM coordination meetings as an observer this fall.

ICATM coordination meetings take place several times a year and provide an opportunity for the five member organizations to discuss activities in the three critical areas of cooperation - validation studies, independent peer review of the validation of test methods, and the development of formal test method recommendations on alternative testing methods.. The meetings are planned to coincide with meetings of the Society of Toxicology and other gatherings of mutual interest to the participant organizations. Regular interactions allow ICATM partners to develop good communications and working relationships, which support collaborations on test method development.

(Cathy Sprankle is a communications specialist with ILS, Inc., support contractor for NICEATM.)

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(bruskec@niehs.nih.gov)

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Email the Web Manager at webmanager@niehs.nih.gov